15¢

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE

Diagnosis
See Page 93

A SCIENCE SERVICE PUBLICATION

WAVE MAKING

–for better telephone service

Waves from the sound source at left are focused by the lens at center. In front of the lens, a moving arm (not shown) scans the wave field with a tiny microphone and neon lamp. The microphone picks up sound energy and sends it through amplifiers to the lamp. The lamp glows brightly where sound level is high, dims where it is low. This new technique pictures accurately the focusing effect of the lens. Similar lenses efficiently focus microwaves in radio relay transmission.

At Bell Telephone Laboratories, radio scientists devised their latest microwave lens by copying the molecular action of optical lenses in focusing light. The result was a radically new type of lens – the array of metal strips shown in the illustration. Giant metal strip lenses are used in the new microwave link for telephone and television between New York and Chicago.

The scientists went on to discover that the very same type of lens could also focus sound . . . thus help, too, in the study of sound radiation . . . another field of great importance to your telephone system.

The study of the basic laws of waves and vibrations is just another example of research which turns into practical telephone equipment at Bell Telephone Laboratories . . . helping to bring you high value for your telephone dollar.

BELL TELEPHONE LABORATORIES

Working continually to keep your telephone service one of today's greatest values

MEDICINE

Synthetic Pain-Killer

Dromoran is only three steps, chemically, from being long-sought synthetic morphine. No one wants to complete synthesis because new drug is so much better than morphine.

➤ A BRAND-NEW pain-killing drug, more powerful and longer acting than morphine, has joined the group of synthetic drugs which now make the United States independent of foreign sources of opium and its derivatives, morphine and codeine.

The new drug is almost a synthetic morphine. It has the trade name of Dromoran. It is not yet on the market, although a new-drug application has been filed with the U. S. Food and Drug Administration. This means it could be marketed whenever its manufacturer, Hoffmann-La Roche, wants to do so.

Dromoran is just three steps, chemically, from being synthetic morphine. Two of the three steps could easily be taken by many chemists, but the last one may stop them from reaching the long-sought goal of synthetic morphine itself. For practical purposes, no one now cares about completing the synthesis because Dromoran is so much better than morphine. It can even serve as a source of synthetic codeine.

The synthesis of Dromoran was started by a German chemist, Dr. Rudolf Grewe, at Gottingen during World War II. Dr. Grewe then went to Basel, Switzerland, where he worked with chemists at Hoffmann-La Roche's laboratories to complete the synthesis of Dromoran. When first reported in scientific journals, it was given either its code name, Nu 2206, or its chemical name, 3-hydroxy-N-methyl-morphinan.

Closely related to morphine, Dromoran is even more closely related to desomorphine, a synthetic pain-killer developed by Dr. Lyndon F. Small of the U. S. National Institutes of Health. Desomorphine is the most powerful pain-killer known, but is very short-acting. Because its effects wear off so quickly, it has not been marketed in this country, though it is made in Basel and used a lot in Switzerland and some other European countries.

Dromoran unfortunately can cause drug addiction, like morphine. If marketed here it would have to be under control of the Federal narcotics law, as morphine is. This is also true of three other new, synthetic pain-killers: Demerol, methadone and levo-isomethadone.

Methadone and levo-isomethadone have proved their worth not only in civilian hospitals in this country but in Army hospitals in Korea and Japan. Wounded soldiers given these drugs reported they made the pain "float away."

The fact that these four drugs make us independent of foreign sources of opium was stressed in a report from the National Research Council.

Science News Letter, February 10, 1951

ANTHROPOLOGY

Mexican 11,000 Years Old

Age of peat layers in which the bones of Tepexpan man were found has been determined by radiocarbon content. Mammoths and prehistoric horses in same site.

➤ THE OLDEST Mexican so far unearthed in archaeological excavations is about 11,000 years old, Dr. Helmut de Terra, discoverer of Tepexpan man, contends in a communication to the journal SCIENCE (Feb. 2).

Determination of the age of peat layers, in which the ancient bones were discovered not far from Mexico City, by means of their radiocarbon content shows this antiquity, Dr. de Terra, now with the Museum of New Mexico, reports.

Radiocarbon dates of plant root material from the same site showed the more recent age of about 4,200 years but Dr. de Terra explains that these roots were grown in an earth layer above the one in which the fossil man was found. Mammoths and prehistoric horses, whose remains are found along with Tepexpan man, were extinct in Mexico much earlier.

Mexico had a fire-using culture at least as early as 6,400 years ago, other radiocarbon tests by the University of Chicago's Institute for Nuclear Studies show. Charcoal from a preceramic layer is dated this early, and this was earlier than the appearance of organized farming by about 3,000 years.

Science News Letter, February 10, 1951

Candy is important in the armed services because much nourishment is packed in a small and easily carried form.

REVOLUTIONARY — Dr. William F. Durand of Stanford University here displays the model of the first variable pitch propeller which he invented 33 years ago, thus revolutionizing propeller design. He is now sending the model to the Smithsonian Institution.

PSYCHIATRY

Shut-in Personality Provides Good Defense

➤ THE MENTALLY disturbed person who withdraws within himself and seals himself off from other persons has built a defense with high protective value for his personality.

So report Drs. Seymour Fisher and Rhoda Fisher of Elgin State Hospital, Elgin, Ill.

Their conclusion was based on a study of the histories of 66 patients suffering from paranoid schizophrenia. Paranoid schizophrenics were selected for the investigation because they are the most easily identified under the current diagnostic scheme. All available material was gathered to show the degree of outgoingness and sociability during childhood and adult life for each individual.

Of those who had been outgoing and sociable in childhood and before their mental breakdown, 85% were "very disorganized," that is, they were unable to carry on a moderately reasonable conversation and had markedly grandiose delusions.

In contrast were those who had shut themselves off from outside contacts. Only 35% of these were very disorganized.

The rate of discharge from the hospital is higher for those with the least bizarre symptoms, the physicians point out.

The results of the study, which are in contradiction to widely held ideas about self-isolation, are published in the JOURNAL OF PERSONALITY. (Sept.)

Science News Letter, February 10, 1951

ICHTHYOLOGY

Jump to Unseen Pools

Gobies leap in right direction and reach water safely, due, it is believed, to memory of topography gained while swimming at high tide.

➤ JUMPING goby fish leap in the right direction, toward more water, and land safely, because they have a memory of the area in which they have been swimming.

This is the suggestion of Dr. Lester R. Aronson, of the American Museum of Natural History, from studies of the jumps made by *Bathygobius soporator*, scientific name for the goby, in tide pools at Bimini, British West Indies.

Gobies are tiny, tropical shore fish, usually about one and one-half or two inches long. Some of their leaps measure close to nine inches.

Dr. Aronson believes that the fish learn the arrangements of objects and obstacles as they swim over the pools at high tide. Then, when locked in the pools at low tide, they have no difficulty jumping in the right direction and landing safely. He further believes that this memory of local topography may be kept for at least two weeks, possibly longer.

As far as Dr. Aronson could tell, the leaps always started with the fish resting on the bottom of the pool. They would face the direction of the pool towards which they were about to jump, their body curved to one side in the characteristic before-leaping pose. Then, with a sudden snap, too rapid to be seen clearly, they would shoot through the surface of the water and fly through the air to the adjacent pool.

Although most of the gobies would jump when prodded, a few would not leap at all, merely swimming, if prodded, in the same pool until exhaustion.

One reason for the goby having learned to jump from one pool to another may be as a means for the fish to get more "living room" and escape from one another, Dr. Aronson believes.

Science News Letter, February 10, 1951

GEOLOGY

Plan Research Program On Petroleum Formation

➤ THE SECRET of how nature made petroleum is to be sought by an intensive study sponsored and financed by the American Petroleum Institute. The new study is part of a continuous fundamental research program for the benefit of the entire industry.

Actual studies will be carried out by the University of California, with field work by the Scripps Institution of Oceanography, La Jolla, Calif., and assistance by Woods Hole Oceanographic Institution, Woods Hole, Mass.

The remains of prehistoric marine animal and plant life buried in sedimentary rock generally are believed to be the source of oil formations. However, no detailed scientific evidence exists as to how this conversion occurs.

The present program is a three-year project. Field work will start this summer Present plans call for the project to be devoted to a study of recent and near-recent sediments, that is, sediments laid down within the last 100,000 years, in the Gulf Coast area.

Cylindrical plugs of earth will be taken from different depths by core drilling both on dry land and out in the water. It is planned to begin the work at points inland and move seaward to where the water is about 60 feet deep.

It is thought that these newly laid deposits will show some relationship to deposits now yielding oil. Geologists feel that the underground formations in which oil is found began as surface deposits of marine animal and plant life in earth sediments laid down by prehistoric seas.

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Question Box

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SCIENCE NEWS LETTER
VOL. 59 FEBRUARY 10, 1951 No. 6

44,800 copies of this issue printed

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N. W., Washington 6, D. C., NOrth 2255. Edited by WATSON DAVIS.

Subscription rates: 1 yr., $5.50; 2 yrs., $10.00; 3 yrs., $14.50; single copy, 15 cents, more than six months old, 25 cents. No charge for foreign postage.

Change of address: Three weeks notice is required. When ordering a change please state exactly how magazine is now addressed. Your new address should include postal zone number if you have one.

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Printed in U. S. A. Entered as second class matter at the post office at Washington, D. C. under the act of March 3, 1879. Acceptance for mailing at the special rate of postage provided for by Sec. 34.40, P. L. and R., 1948 Edition, paragraph (d) (act of February 28, 1925; 39 U. S. Code 283), authorized February 28, 1950. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to periodical Literature, Abridged Guide, and the Engineering Index.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc. 393 7th Ave., N.Y.C., PEnnsylvania 6-5566 and 360 N. Michigan Ave., Chicago. STAte 2-4822.

SCIENCE SERVICE

The Institution for the Popularization of Science organized 1921 as a non-profit corporation.

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GENERAL SCIENCE

Scientists of Tomorrow

Ten girls and 30 boys have been invited for an all-expense trip to Washington to compete in the finals for Talent Search Scholarships totalling $11,000.

➤ THE FORTY most promising young scientists in America's high schools have just been selected in the Tenth Annual Science Talent Search. The winners—ten girls and 30 boys—have been invited to Washington for a five-day all-expenses-paid visit March 1 through March 5.

They will participate in the Science Talent Institute and compete for $11,000 in Westinghouse Science Scholarships in the finals of the Science Talent Search conducted by Science Clubs of America, administered by Science Service.

The 40 trip-winners, 15 to 17 years of age, were chosen by a panel of judges after a nation-wide competition in which top-ranking seniors in all the public, parochial and private schools in the continental United States were invited to participate. Entrants, representing every state in the Union, totaled 13,638, of whom 1,771 completed the stiff science aptitude examination, submitted recommendations and scholarship records and wrote a report on "My Scientific Project."

At the end of the winners' five-day stay in Washington, March 1 through March 5, the judges will award the scholarships. One boy or girl will receive the $2,800 Westinghouse Grand Science Scholarship ($700 per year for four years). The runner-up will receive a $2,000 Westinghouse Science Scholarship. Westinghouse Science Scholarships, ranging in size from $100 to $400 and bringing the total to $11,000, will be awarded at the discretion of the judges to the rest of the winners.

May Be Used Anywhere

The scholarships may be used at any college, university or technical school of the winners' choice so that they may continue their training in science or engineering.

Chosen without regard to geographic distribution, the 40 trip-winners come from 37 cities in 15 states. All of the states represented except Maryland have had a winner in previous Searches. The total of states that have been represented by winners since 1942 is 39.

Two high schools in the United States have produced more than one winner this year. Leading is Stuyvesant High School in New York City with three boys invited; Forest Hills (N. Y.) High School will send two girls.

Twenty-three of the winners this year come from schools that have never before placed winners in the annual Science Talent Search. The other 17 among this year's winners are adding new laurels to schools already honored by having produced winners in the past.

According to the records of the ten years of the Science Talent Search the standing of this year's "repeater" schools is: 16 have come from Stuyvestant High School, 13 from Forest Hills High School, six from Brooklyn, N. Y., Technical High School, five from Eugene, Ore., High School, four from Phillips Exeter, N. H., Academy.

Through the 10 years three winners have been produced by: New Brunswick, N. J., High School; Roslyn Heights, N. Y., High School, and Kenmore, N. Y., Senior High School.

Through the 10 years two winners have been produced by: Barringer High School, Newark, N. J.; Arlington Heights, Ill., High School; Orono, Maine, High School; Phillips Academy, Andover, Mass.; Niagara Falls, N. Y., High School, and Burnham High School in Sylvania, Ohio.

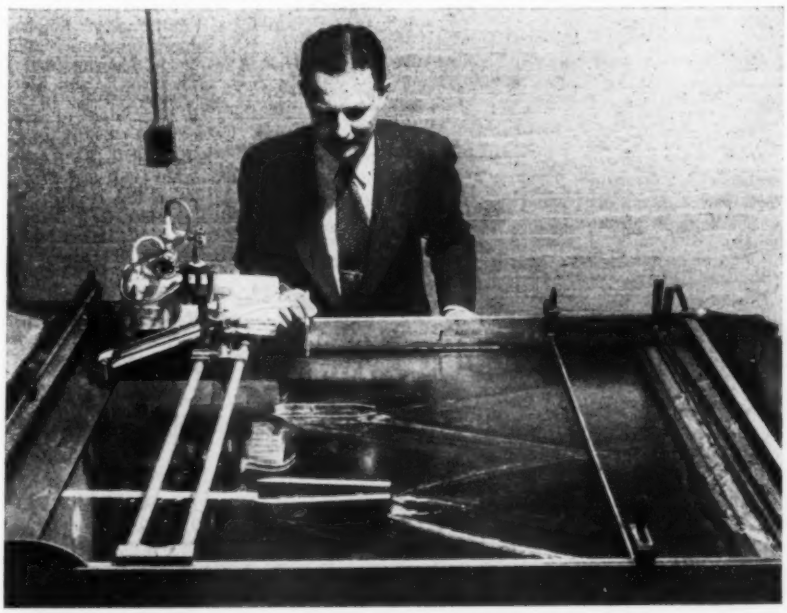
Most of the winners live at home and attend their local or nearby public, parochial or private secondary schools. Two attend private schools in other states.

Over half (63%) of the Science Talent Search trip winners rank first, second or third in their graduating classes, which range in size from 12 to 680 students. Approximately 55% of the winners' fathers and 45% of their mothers attended college. A number have parents who were born or educated abroad. Relatively few claim scientists among their relatives.

Contrary to a frequent conception of scientists, the winners are not interested in science only. While most of them spend much of their spare time in science pursuits such as science clubs and individual hobbies of a scientific nature, all of them have participated in varied extracurricular interests such as music, athletics, journalism and dramatics, and all belong to social and educational organizations outside their school work.

Many of the top 40 have already chosen the lines of study they wish to pursue. Physics attracts 10, seven intend to study chemistry, and seven lean toward careers in biology. Others plan careers in mathematics, astronomy, aerodynamics, engineering, geology, medicine, biochemistry and veterinary science. All hope to do research in their respective fields.

Most of the 360 winners in the first nine Science Talent Searches held since 1942 are undergraduate or graduate students in colleges or universities where they are preparing themselves for scientific careers. A total of 200 now have undergraduate degrees, 43 have master's degrees and ten are Ph.D's. Twelve are M.D.'s. More than



WAVE PATTERNS—By studying the water flow around these models, engineers can learn about the waves created in the air by rockets and other missiles. ***(See page 87)***

50 are now employed full-time in science jobs in industry or professions, or are on university teaching or research staffs. Eight are now serving in the armed forces. None of the 360 previous winners is more than 27 years old.

In addition to the 40 trip-winners, who will attend the Science Talent Institute in Washington, an Honorable Mentions list of 260 in the Tenth Annual Science Talent Search was announced Feb. 8. These high ranking contestants will be recommended to colleges and universities for their aptitude in science. If they are as fortunate as those previously included in the Honorable Mentions list, they will receive offers of scholarships from many institutions of higher education seeking students with talent in science.

Honorable Mentions Named

Girls number 62 of the 260 outstanding seniors in the list, and 198 are boys; the division was determined by the ratio of girls to boys who participated in the competition.

The 260 young people to whom Honorable Mention listing was given reside in 159 communities, located in 34 states.

All 300 (40 winners; 260 honorable mentions) selected for honors will be recommended as candidates for matriculation to scholarship-awarding colleges and universities.

In the nine preceding Science Talent Searches, most of the students named in the Honorable Mentions list have been offered scholarships, and many of those named this year will qualify for valuable scholarships and other financial aid in the colleges, universities and technical schools of their choice. The judges found all 300 winners to be students of outstanding ability.

One of the 260 honorable mentions, Edward Donald Ball, Jr., of Nashville, Tenn., will receive the honor posthumously. He died Jan. 1, following injuries sustained in a cave exploration during the Christmas holidays.

Students in the Honorable Mentions list invariably rank high in their high school graduating classes: 29% of the boys and 39% of the girls stood first or second among their classmates.

State Talent Searches

Through an arrangement with Science Clubs of America, 23 states are conducting state Science Talent Searches concurrently with the national competition. None of them have produced winners this year. In these 23 states all entries in the national Science Talent Search will be turned over to state judging committees. From their entries they will choose state winners and award scholarships to various colleges and universities within the state. Cooperating states are: Connecticut, District of Columbia,

GENERAL SCIENCE

STS Winners Selected

		CALIFORNIA
El Cerrito	Johnson, Donald Bruce	17 El Cerrito H. S.
Independence	De Decker, Carol Lynne	17 Owens Valley H. S.
Lafayette	Lyser, Katherine May	17 Acalanes Union H. S.
Paso Robles	Chambers, Derrell Lynn	16 Paso Robles H. S.
		ILLINOIS
Arlington Heights	Cummisford, Patricia Diane	16 Arlington Hgts. Twp. H. S.
		KANSAS
Gypsum	Janousek, Lucile Frances	17 Gypsum Rural H. S.
		MAINE
Lewiston	Berkelman, Karl	17 Lewiston H. S.
Orono	Brush, Stephen George	15 Orono H. S.
		MARYLAND
Hyattsville	Martin, Mary Helen	17 Hyattsville H. S.
		MASSACHUSETTS
Andover	McColm, Douglas Woodruff	17 Phillips Academy
Arlington	Spencer, Dana Royce	17 Arlington Senior H. S.
E. Bridgewater	Earle, William Edward	17 Senior-Junior H. S.
		MINNESOTA
Cloquet	Larson, David Clarence	16 Cloquet H. S.
		NEW HAMPSHIRE
Exeter	Wharton, Lennard	17 Phillips Exeter Academy
		NEW JERSEY
Newark	Sibilia, John Talbot	17 Barringer H. S.
New Brunswick	Demkovich, John Joseph, Jr.	17 New Brunswick H. S.
Princeton	Shteir, Owen Aaron	17 Princeton H. S.
		NEW YORK
Ardsley	Ernst, Frederick Joseph, Jr.	17 Ardsley H. S.
Brooklyn	Beaverman, Paul Maxim	17 Brooklyn Technical H. S.
Croton-on-Hudson	Botkin, Dorothy Ann	16 Croton-Harmon H. S.
Delmar	Thomson, Richard Mansfield	17 Bethlehem Central H. S.
Forest Hills	Mendoza, Rhea	16 Forest Hills H. S.
	Novotny, Eva	16 Forest Hills H. S.
Harrison	Stewart, James Buchanan	17 Harrison H. S.
Kenmore	Simpson, Robert Edmund	17 Kenmore Senior H. S.
New York	Feldstein, Robert Schmidt	16 Stuyvesant H. S.
	Rosen, Robert	16 Stuyvesant H. S.
	Schneider, Peter Bernard	17 Stuyvesant H. S.
Niagara Falls	Kolenkow, Robert John	17 Niagara Falls H. S.
Roslyn Heights	Chester, Conrad Vences	17 Roslyn H. S.
		OHIO
Celina	Spangler, Robert Alan	17 Celina H. S.
Lakewood	Butler, James Newton	16 Lakewood H. S.
Sylvania	Norris, Daniel Howard	17 Burnham H. S.
		OREGON
Eugene	Frolen, Lois Jean	17 Eugene H. S.
The Dalles	Wheeler, Nicholas Allan	17 The Dalles H. S.
		PENNSYLVANIA
Lebanon	Gingrich, Cynthia Louise	16 Lebanon Senior H. S.
Philadelphia	Drauglis, Edmund	17 Northeast H. S.
Pittsburgh	Sieffert, Paul Louis	17 North Catholic H. S.
		TENNESSEE
Maryville	Cowan, James Jones, III	17 Maryville H. S.
		WEST VIRGINIA
Keyser	Dennison, John Manley	16 Keyser H. S.

Georgia, Illinois, Indiana, Iowa, Kansas, Louisiana, Maine, Massachusetts, Minnesota, Montana, New Hampshire, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Vermont, Virginia, West Virginia and Wisconsin.

The Annual Science Talent Search is conducted by Science Clubs of America, administered by Science Service. Scholarships are provided and the Science Talent Search made financially possible by the Westinghouse Educational Foundation, an organization endowed by the Westinghouse Electric Corporation, for the purpose of promoting education and science.

Science Clubs of America, administered by Science Service, is the international organization for science groups, in schools and out. Today more than 15,000 clubs are affiliated here and abroad, with a membership of more than one-third of a million young people.

The judges of the Science Talent Search are: Dr. Harlow Shapley, director of the Harvard College Observatory and president of Science Service; Dr. Harold A. Edgerton, vice president, Richardson, Bellows, Henry & Co., and Dr. Steuart Henderson Britt, director of personnel, McCann-Erickson, Inc., both psychologists of New York City; and Dr. Rex E. Buxton, psychiatrist of Washington, D. C. Drs. Edgerton and Britt design the Science Aptitude Examination each year for the Science Talent Search.

ENGINEERING

Water-Flow Table

➤ INEXPENSIVE apparatus called a water-flow table is being used at Rensselaer Polytechnic Institute in Troy, N. Y., to study how air behaves when it is penetrated by jet planes, rockets or missiles traveling faster than sound.

Preliminary tests of models of proposed supersonic planes and rockets to determine flight efficiency can be made with the water-flow table, saving the need for costly wind tunnel tests for only those found satisfactory.

In the water-flow table, a smooth sheet of water moves at uniform depth over a sloping plate glass surface. A model, whose efficiency of shape is under study, is placed on the flow surface. The obstruction causes wave patterns and turbulent areas to form and these are found to resemble closely the disturbances created in air by the passage of high-speed objects.

Micrometers show the depth of the water flow, gauges record its velocity. Any desired air speed, up to incredibly high levels, can be simulated by governing the rate of the water flow with the control valve or by changing the slope of the table. The resulting waves and turbulence around a model under test are measured, photographed and studied to afford the scientists a fairly accurate idea as to what would happen to a real airplane or missile flying at the simulated speed.

"It is, of course, impossible for the water flow table to reproduce the exact reactions of air flight," comments Prof. Harold A. Wilson, who has developed a highly efficient table for Rensselaer Polytechnic Institute. "The water flows at a uniform depth but its velocity decreases from the surface downwards. This makes it impossible to get the complete rounded effect obtained in wind tunnels or by other complicated devices."

Prof. Wilson points out, however, that the flow table affords findings which are sufficiently accurate for preliminary testing of flight efficiency. It permits the scientists to screen out unsatisfactory models and use the wind tunnels and other costly apparatus only for final tests. Apart from the field of supersonic flight the water flow table has proved useful in testing the efficiency of steam turbine valve throats and nozzles, as well as in many other ways.

The first flow tables were made by Hitler's warplane designers. The first ones built in this country were based on reports made by United States occupation troops at the end of the war and only a few have been developed here.

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AGRICULTURE

First California Merino

➤ TO HELP solve America's wool shortage, the first Merino sheep exported from Australia to any country other than New Zealand in 25 years have arrived at the University of California's College of Agriculture.

Three rams and nine ewes from the best strains of Australian Merinos—finest wool bearing animals in the world—will be added to the University's breeding project on the Davis campus and on a Mendocino county field station.

Object of the breeding program is to put superior wool of Australian sheep on the backs of the superior bodies of American sheep.

The Merinos were sent to the University of California's College of Agriculture under an exclusive grant by the Commonwealth of Australia, the first time in 25 years that an iron-clad embargo against exportation has been lifted.

The bringing of Merino sheep to the United States is the culmination of many years' endeavor by Dr. J. F. Wilson, professor of animal husbandry at the University of California, R. D. Foote, farm adviser of Mendocino county, Agricultural Extension Service, and Mr. and Mrs. J. W. Mailliard, Jr., of San Francisco, whose gift to the University financed the purchase of the Merinos.

Dr. Wilson and Mrs. Mailliard flew to Australia last fall to select the sheep. They were chosen from three of the more than 400 Merino stud flocks in the Australian Commonwealth.

Science News Letter, February 10, 1951

METEOROLOGY

More Cold Weather In Store for Nation

➤ IT will be colder than usual during the rest of February over almost all the country, the Weather Bureau has predicted. Only in the extreme Southwest, Florida and New England will temperatures average around or above normal. Temperatures farthest below normal are expected in the western Gulf states.

However, few days during the month will be close to the average expected for the month, especially in the northern portions of the nation. The Extended Forecast Section of the Bureau expects to see a large week-to-week fluctuation of temperatures.

For the first time in months, "substantial amounts" of rain are predicted for the parched Southwest. Over the last 17 to 18 weeks parts of southern California, Arizona, New Mexico and western Texas have reported only traces of rain or none at all. If this prediction is carried out, the fears of another dustbowl will be somewhat allayed.

The country east of the Mississippi can expect more snow and rain than it usually receives during February. Exceptions will be Florida and the western lakes region which can expect "light amounts" of precipitation.

The rest of the country can expect normal amounts of rain and snow during the remainder of February.

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The destructive *gypsy moth* was brought to America from France in 1869 for the purpose of crossing it with the silkworm.

It is not possible to tell by microscopic examination, or by any other know tests, what race of man a given sample of *blood* came from.

A barge loaded with steel beams, which during a recent storm was lost and sunk in Chesapeake Bay, was located with an airborne *magnetometer*, a device used to locate enemy submarines during the war.

SURGERY

Radioactive Nylon Thread Used Against Cancer

➤ RADIOACTIVE NYLON thread that the surgeon can stitch into place is the latest aid for cancer treatment reported by the Atomic Energy Commission. It was devised by Dr. William J. Myers of Ohio State University Medical Center.

The thread is made by stretching warm nylon tubing to a small diameter and then inserting radioactive cobalt wire. The thread with its radioactive core is strong but fine enough to fit the eye of the surgeon's usual needles.

It is less irritating to the patient because of its flexibility. It can be placed in any location that can be reached by a needle, either from the surface of the body or during a surgical operation. At the end of treatment the threads are removed like stitches after an operation.

Science News Letter, February 10, 1951

OCEANOGRAPHY

California Coast Has New Underwater Valley

➤ A NEW VALLEY, deep under the Pacific Ocean, has appeared off California's coast.

Discovered during a survey with portable echo-sounding equipment, the new valley may have been caused by a light earthquake felt in La Jolla since the last previous survey.

Its existence is reported by Dr. Francis P. Shepard, of Scripps Institution of Oceanography. Research on the everchanging filling and deepening of submarine canyons and valleys is being done for the Navy's Office of Naval Research and the Army's Beach Erosion Board.

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ENGINEERING

Slow Driving and Chains Best on Ice and Snow

➤ SLOW, CAREFUL driving and tire chains are important essentials for safety on ice and snow, according to the National Safety Council, which confirms in recent studies the findings made in earlier practical experiments.

Tests of driving on glare ice and on snow were made under the sponsorship of the council's Committee on Winter Driving Hazards under various conditions and with various equipment. Most of them were made at Clintonville, Wis.

So-called winterized tires and mud-snow tires may or may not stop a car somewhat shorter on glare ice than conventional tires made of natural rubber, the committee states. Tire chains stop much shorter, the tests show.

Average braking distances on a car traveling at 20 miles an hour on glare ice are 209 feet for conventional natural rubber tires and 77 feet if equipped with chains, it is found. Braking distances for winterized and mud-snow tires range from 188 feet to 201 feet.

Pulling power on loosely packed snow for conventional tires averages 391 pounds. With reinforced tire chains on conventional tires it is 1,570 pounds. The specialized tires range from 394 to 563 pounds.

Careful driving remains the first essential in winter driving safety. The use of tire chains on ice and snow cuts braking distances on cars and trucks 40% to 70% and provides needed "go" traction. Other recommendations of the committee include keeping windshields clear of ice, snow, frost and fog to assure good vision, adjusting speed to road and weather conditions, and following other cars at a safe distance. Drivers should remember that, without chains, it takes from three to 12 times as far to stop on snow and ice as on dry concrete.

Science News Letter, February 10, 1951

INVENTION

Raw Egg Coating Holds in Coffee Flavor

➤ COFFEE flavor and aroma is preserved without vacuum packaging by a process of treating roasted coffee in which the beans are coated with a paste of raw eggs at a temperature of about 150 degrees Fahrenheit. The paste not only holds in flavor and aroma but also improves the taste of the coffee. Patent 2,539,626 was awarded to Helen Louise Kellogg, executrix of John L. Kellogg, deceased, of Chicago.

Science News Letter, February 10, 1951

CHEMISTRY

Revolutionary Paints Predicted for Future

➤ RADICALLY new paints, lacquers and enamels are predicted for the next decade by Henry F. Payne, technical editor of the American Cyanamid Co. and secretary of the American Chemical Society's paint, varnish and plastics division.

Liquid synthetics of low molecular weight will be converted into solid film by an entirely new process which is not yet discovered, he foresees. Chemical synthesis has already produced coatings which will dry faster than natural oils and resins and have greater toughness, resistance and durability.

Automobiles now get finishes of alkyd and melamine resins applied in two or three coats in two or three hours. These are more durable than coatings of earlier automobiles that needed six to eight coats, taking ten days' time.

Science News Letter, February 10, 1951

IN SCIENCE

MEDICINE

New Chemical Eases Pains of Childbirth

➤ SUCCESS with a new chemical aid for easing the pains of childbirth is announced by Dr. Frank E. Baum of Maumee Valley Hospital, Toledo.

The chemical is hyaluronidase. It is used in a solution with the local anesthetic, procaine, and epinephrine, more familiarly known as adrenalin. Hyaluronidase is not itself an anesthetic or pain-killer, but has ability to increase the spread and absorption of other chemicals in solutions when injected under the skin.

Only one out of 50 patients failed to get complete relief of pain and relaxation of the perineum. In many cases the mother was not aware her child had been born until she heard it cry, Dr. Baum states in his report. (AMERICAN JOURNAL OF OBSTETRICS AND GYNECOLOGY, Dec.)

The chemical was put into the pain-killing solution used for pudendal block anesthesia, a method of blocking pain by injecting the pain-killing chemical into a nerve. Hyaluronidase spread the anesthetic mixture rapidly and made it unnecessary to deposit the anesthetic directly at the site of the nerve. Adjacent tissues not supplied by the nerve were also anesthetized.

Science News Letter, February 10, 1951

PHYSICS

Physical Constants Refigured for Science

➤ AID IN CRACKING the mystery of the atom will come from the new values for 60 basic physical constants which have been compiled by Dr. J. A. Bearden and H. M. Watts of Johns Hopkins University.

The figures are used by scientists in computing and judging results of their atom-exploring studies. Dr. Bearden and Mr. Watts calculated the new values mathematically, giving weight both to figures from recent, more accurate studies and to those from classical experiments.

Their calculations set the speed of light at 299,790.0 kilometers per second, with an estimated error, either more or less, of seven-tenths of a kilometer per second. This is about seven-tenths of a kilometer per second faster than the most recently announced figure. (*See SNL*, Nov. 18, 1950). Other basic constants they have revalued include the mass and charge of the electron, basic unit of electricity. The changes made in the generally accepted values are extremely small.

Science News Letter, February 10, 1951

ENCE FIELDS

METEOROLOGY

Radioactive Gas Shows Water-Cloud Pick-Up

➤ WATER from the oceans and lakes of the earth is carried up into the clouds much faster—and more of it is carried higher—than weather experts previously believed.

These are the conclusions to be drawn from a study carried on by Dr. Lester Machta of the U. S. Weather Bureau and reported to the joint session of the American Meteorological Society and the Institute of the Aeronautical Sciences in New York.

Little is known about the movement of air upward from the earth's surface, "vertical eddies" as the meteorologists call them. Dr. Machta hit upon a new method of measuring these vertical eddies. Radon gas, from decaying radium, is known to be given off from every point on the earth's surface, although in only minute amounts.

Dr. Machta measured the amounts of this gas, in its various decaying forms, to be found at various levels of altitude.

Radon gas, being radioactive, decays at a known rate. Working from this fact he was able to tell how much of the gas given off by the earth arrived at various altitudes and how fast it arrived. Since this gas was carried up by the vertical eddies, he could measure their speed and their carrying power.

Much more is known about horizontal eddies, Dr. Machta said. If there were greater knowledge of vertical eddies, we would know more about how the atmosphere draws up water from the earth, how clouds are formed and how it rains.

Dr. Machta took samples from the air in four flights, two off the California coast and two over Ohio. There is a difference, he said, in the amount of radon given off by water and the amount given off from the land.

Science News Letter, February 10, 1951

GENETICS

Try To Produce Disease-Resistant Tobacco

➤ WHETHER tobacco farmers can defeat the destructive blue mold by planting specially bred, disease-resistant crops is being tested in seed beds for the first time this year. Blue mold seriously menaces the multi-million dollar tobacco industry.

The year's first case of blue mold attacking greenhouse tobacco has been reported. Dr. E. E. Clayton, Agriculture Department official in charge of tobacco disease research at the Plant Industry Station, Beltsville, Md., predicts that the first case of this airborne mold attacking field plants will come about the middle of February, probably somewhere in Georgia.

The damage caused by blue mold depends on weather conditions when the attack is at peak, usually around the second week in March. Cool, cloudy conditions favor a very destructive outbreak, while bright, warm weather cuts down the damage from the mold.

Although the di-thio-carbamate fungicides, fermate and diphane, are effective against blue mold, many tobacco farmers have not yet adopted this form of protection for their plants.

Science News Letter, February 10, 1951

INVENTION

Rolling Perch Gives Exercise to Fowl

➤ THE CHICKEN in the tiny coop need no longer suffer from lack of exercise. A rolling perch, invented by Bernhard J. Gass of Washington, D. C., provides the exercise to develop the muscles of the fowl and help keep the bird in good physical condition.

The device brought the inventor a patent from the government recently. Patent 2,539,348 was issued to him on what is officially an exercise perch for fowl.

It consists of a round rod, of any length desired, which extends between two uprights with interior slots in which the ends of the perch roll. Perch and supports can be made in different sizes to accommodate different size birds. The "unbalance" of the fowl trying to roost on the perch causes it to roll. Leg muscles get the most exercise but the entire body gets some.

Science News Letter, February 10, 1951

CHEMISTRY

New Detergent Removes Surgical Tape

➤ IMPROVED SOLVENT, for removing surgical tape, actor's wigs and false mustaches, and even paint, varnish and chewing gum, from the body, brought Steven Clensos, Los Angeles, patent 2,539,531. The preparation is odorless and, unlike some other solvents used for the purpose, is harmless to the skin.

This detergent, as it is called, consists of a mixture of light liquid petroleum jelly and hydrocarbon fractions from all but the lower and upper kerosene range. Perfuming and coloring ingredients may be used. It includes enough of a non-volatile hydrocarbon to return to the skin as great a percentage of oils as removed by the more volatile constituents of the solvent.

Science News Letter, February 10, 1951

PHYSICS

Reflected Sound Waves Assist the Blind

➤ A SIMPLE system to aid the blind, developed in London, utilizes sound waves to warn the user of obstacles ahead. It is a development made by engineers at St. Dunstans' Society.

It consists of an instrument, similar in size and appearance to a large electric torch, which is carried by the blind person. It contains equipment and batteries to send out a thin beam of sound waves which is reflected back to the ears if an object is encountered by it.

It follows the principle of wartime radar, but uses sound waves, not radio signals. The sound is sent out in the form of clicks and received as clicks. The blind person hears almost no sound from the instrument, but listens for reflected noise from objects in the way.

Science News Letter, February 10, 1951

NUTRITION

Children Fail To Get Enough Energy Food

➤ START EARLY to train the child in good food habits, advises Dr. Pauline Beery Mack, director of the Ellen H. Richards Institute at Pennsylvania State College. Food habits tend to get worse, not better, as the child gets older. If he has not gotten a good start, it is harder to rehabilitate him, nutritionally, because he has to make up for lost time. Poor nutrition is cumulative, with poor physical status in middle and later life resulting.

Dr. Mack's advice is based on records of 2,564 children included in the Pennsylvania mass studies in human nutrition since Jan. 1, 1944. She found that less than 40% were meeting the current energy recommendations for their respective sexes and ages at the time of the test, with about one-fourth falling below 75% of caloric recommendations. From three-fourths to four-fifths of them were reaching the recommendations for phosphorus and vitamin A. Approximately 60% were consuming the amount of protein, calcium, riboflavin, niacin, and vitamin C recommended, with approximately one-half conforming only to the recommendations for iron and thiamine.

Dr. Mack also reports that children under four appear to have the best food habits while those from four to six are slightly poorer. The habits begin to slide as the children grow older with girls from 13 to 15 years of age coming farther from meeting the recommendations, particularly of energy, than any of the other sex-age groups. Young women from 16 to 18 are only slightly better. While boys at these ages also leave much to be desired, they surpass the girls of the same age in adherence to diet recommendations.

Science News Letter, February 10, 1951

MEDICINE

Modern Balm for Hearts

Alcohol is now prescribed, not to drown grief, but to ease burden on overtaxed heart. Quinidine, digitalis, procaine and ACTH are other aids to faltering hearts.

By JANE STAFFORD

➤ THIS is the time of hearts—St. Valentine's Day and romance symbolized by conventional hearts pierced by cupid's arrows. Life-saving medical research on illnesses connected with the human heart are even more important. There is hopeful progress that will "lift up our hearts."

Lace-edged valentines suggest bygone days when love-sick swains sang sentimental ditties about broken hearts. And when rejected suitors drowned their grief in alcohol.

Today alcohol is likely to be used as heart balm by the middle-aged executive whose doctor has prescribed it in moderation to ease the load of an overtaxed heart.

The reason for prescribing a mild cocktail or highball at the end of the day is because of the alcohol's effect in dilating small blood vessels. When the walls of these vessels thicken and harden, as they do in arteriosclerosis, or hardening of the arteries, the bore of the vessels is narrowed. Then the heart must work harder to pump blood through to all parts of the body.

Balm for damaged hearts today includes such other drugs as quinidine, digitalis, procaine and that very new medical aid, ACTH.

Household Word

Those four letters, ACTH, short for adrenocorticotropic hormone, have become a household word in thousands of homes during the past year and a half. The hormone comes from the pituitary gland, powerful organ buried at the base of the brain. It first gained fame for its ability to relieve pain-stiffened and crippled joints in arthritis, or rheumatism.

Beneficial effects in rheumatic fever were next chalked up to its credit and now this powerful hormone drug seems likely to save children and young people from the worst effects of rheumatic fever, rheumatic heart disease.

Early treatment of acute rheumatic heart disease with adequate amounts of ACTH should shorten the course of the disease, reduce heart damage from it to a minimum and prevent death due to progressive heart damage, two New York doctors have just declared. They are Drs. May G. Wilson and Helen N. Helper of the New York Hospital and Cornell University Medical Center.

This opinion, which seems to foretell the conquest of the greatest disease killer of children and young people, is based on results in young patients treated with ACTH. The hormone chemical stopped the signs and symptoms of progressive acute rheumatic heart disease in every one of 11 consecutive patients.

The good results were obtained within three to seven days. The patients were able to be up out of bed and walking about within two to four weeks. In five of the patients there was no further sign of increased heart damage when the patients were examined four to 12 months after treatment. In six patients treated during what was presumed to be their first attack, there was no sign of heart damage in two and doubtful sign of it in three at the examination four to 12 months after treatment.

Treated Early

The fact that these patients were treated early in the attack of acute heart trouble is considered significant. Heretofore the effects of ACTH in rheumatic fever have been observed in patients who had been sick for several weeks before ACTH treatment was started. The effects of the hormone chemical in stopping the heart damage therefore could not be determined too well.

Procaine, synthetic pain-killing chemical most familiar as the local anesthetic used by dentists, is now being used to make hearts less irritable. During operations on the heart, such as the famous blue-baby operation, the surgeon sprinkles procaine directly on the heart so that it will tolerate better the handling it must get during the operation. In some cases, the surgeon may prefer to inject a solution of the chemical into the veins and let the blood stream carry it back to the heart.

The word heart comes from a Greek word meaning quivering or shaking. Normal hearts quiver or shake in a steady rhythm, usually called a beat. In some heart troubles, the rhythm is upset, different parts or even different fibers of the heart muscle quivering independently of each other. Balm for some cases of disordered heart rhythm is quinidine. This chemical is a relative of the old anti-malaria drug, quinine. Like quinine, quinidine comes from the bark of the cinchona tree.

To make hearts beat more strongly as well as in better rhythm, doctors use a different kind of medicine, digitalis from the foxglove plant.

And to prevent one kind of heart break, there is penicillin. Because hearts do occasionally break, though not from romantic disappointment. When the spirochete of syphilis invades the wall of the aorta, the great blood vessel leading from the heart, it damages the wall so that it gets thinner and thinner. Pressure of the blood being continually pumped through it further weakens the wall until it bulges and may finally rupture, or break. Prompt, adequate treatment of syphilis, now easily accomplished with penicillin, lessens this danger or abolishes it.

Medical scientists are working hard to find even better ways of helping the 9,000,000 men, women and children in the United States who have heart disease and the millions more in other parts of the world with such afflictions. New operations to correct inborn defects of the heart have been developed. Penicillin and other medicines can now stop many germ diseases that affect the heart. A new machine has been invented that may make possible mass examinations to detect early heart trouble. All these give hope that future millions may be spared heart crippling and premature heart death.

The search for more knowledge of heart disease—causes, prevention and treatment—was given added impetus within the past four years. This came through establishment of the National Heart Institute in the U. S. Public Health Service, and by development of the American Heart Association into an organization of doctors and laymen for an aggressive attack on the disease.

Science News Letter, February 10, 1951

BIOLOGY

Streptomycin Decomposed By Bacterial Action

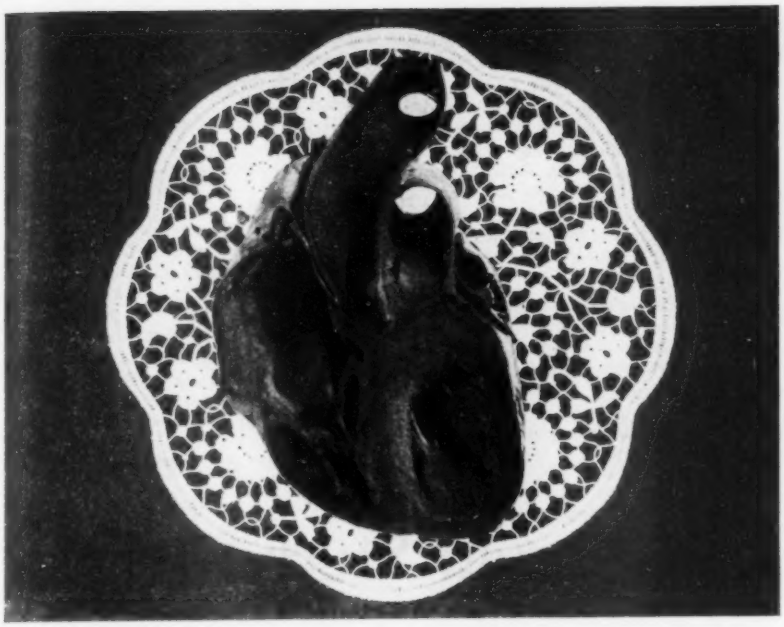
➤ STREPTOMYCIN, contrary to general opinion, can be decomposed by microorganisms though it is more resistant to such decomposition than penicillin and other antibiotics.

A bacterium that can do the job of decomposing streptomycin has been discovered by Drs. David Pramer and Robert L. Starkey of Rutgers University and the New Jersey Agricultural Experiment Station. (SCIENCE, Feb. 2).

This particular bacterium is a rod-shaped one that produces a greenish-yellow color when grown on agar.

While streptomycin is being decomposed, volatile material having a characteristic pungent odor suggestive of malt and the old-time asthma inhalant, pyridine, is produced.

Science News Letter, February 10, 1951



VALENTINE—The real human heart, marvelous pump for the human system, does not look too much like the artist's symbol for this organ. Here is a human heart, in its anatomical detail, broken in half, not by love or sorrow, but to show its inner workings.

DENTISTRY

Brushing Cuts Caries

Careful brushing twice daily reduces tooth decay nearly 10 per cent. Use of ammoniated tooth powder cuts new decay over 20 per cent.

➤ CAREFUL twice daily tooth brushing reduces new tooth decay 9.3%. The same regular brushing with a special ammoniated tooth powder reduces new decay 20.5%.

That is the official score from a two-year tooth brushing study by the originator of the ammoniated tooth powder, Dr. Robert G. Kesel, and his associates at the University of Illinois College of Dentistry.

The two-year project is reported in detail in the JOURNAL OF THE AMERICAN DENTAL ASSOCIATION. (Feb.) The Journal's editor calls it "probably the most comprehensive and carefully conducted study of its kind ever undertaken."

Included in the study were more than 1,700 school children in Aurora and Peoria, Ill.

The children were 10 and 11 years old at the start of the study. This age was selected because it is one of high susceptibility to tooth decay.

The children were divided into four groups. Those from high, middle and low incomes were included in each group. Group A was given a tooth powder containing no ammonia or urea. Group B got a powder containing 5% dibasic ammonium phosphate and 3% urea. Group C got the same tooth powder made with 5% bentonite, a colloidal clay included because of its adhesiveness and cleaning properties.

Group D served as a control. These children were left to follow their usual tooth brushing habits at home. The other three groups brushed their teeth at 9 a.m and 1 p.m. every day under their teacher's supervision at school and were urged to brush their teeth in the same way at home after the evening meal, before retiring, and on Saturdays, Sundays and holidays.

Examinations, including X-rays, were made at the start and end of the study by two dentists from the Illinois State Health Department. These dentists did not know which children were getting ammoniated or other tooth powder or none until after their examinations were completed.

The report published in the dental journal covers only the Peoria children. This is because a large number of Aurora children were shifted to junior high school, where tooth brushing could not be supervised and also because Aurora drinking water contains one part per million of sodium fluoride. This might have some decay-checking effect which Peoria water would not have and so influence the results.

In the control group the average number of teeth attacked by decay per 100 at the end of the two years was 12.80, compared to 11.62 in the group brushing with a nonammoniated tooth powder and 10.18 in the group brushing with ammoniated powder without bentonite.

Dr. Kesel and his associates in the study, Dr. Douglas W. Kerr, and the dental journal editor all stress the fact that the study shows the anti-tooth decay effect of frequent, careful brushing of the teeth as well as of the ammoniated tooth powder.

Science News Letter, February 10, 1951

In a northern district in Siam where 50 out of every 1,000 persons had *malaria* in 1949, the rate was reduced to seven out of 1,000 five months after intensive spraying with DDT.

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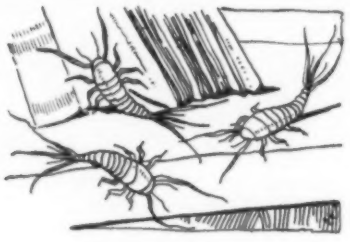
ENTOMOLOGY

NATURE RAMBLINGS



Silverfish

➤ ONE of the most bothersome of household insect pests, that does not suspend operations even in the winter, is the silverfish, a bristle-tailed insect seldom seen and hard to catch when it is seen.

Its tapering body suggests a fish, and it is covered with glistening little scales, so the name is not inappropriate. Also it slips through the fingers that try to imprison it, like a wet fish.

Silverfish will turn up in the best-kept of houses, and indeed are especially likely to appear in homes that boast a library. For they are among the most troublesome of book pests. They will eat paper, being particularly fond of high quality papers with a glazed surface. They may also eat the paste that holds the binding together, and if their nefarious work goes on long enough, it may require the rebinding of whole sets of volumes. By the same affinity for glue or paste, they are enemies of wall paper.

Besides ruining books and wall paper, the silverfish aims at the destruction of anything held together with paste or gum. It plays havoc with starched clothing, chews at the gum-glazed cardboard labels in museum cases, and gets into stored cereals and other starchy foods. It is fond of rayon and may cause serious damage to fabrics made of this fiber.

The silverfish multiplies most annoyingly. Like several other insects, it does not need a water supply to exist. The water needed for life is obtained by chemical processes within the body. The insect just manufactures it as required from its food material.

Silverfish are among the most primitive insects, according to the classification schemes of naturalists. Their body-structures are little specialized, their reactions are among the least complex known, and they have no wings. They have a number of relatives, including the so-called bristletails, and these all have the same shy and furtive habits.

Efforts to discourage these pests have been made by bookbinders who "dope" their paste with arsenic. More effective in controlling silverfish is DDT, used either as a spray or a dust. When this pest-killing chemical is applied thoroughly to the spots where the insects occur, death comes quickly, and a deposit of the chemical remains to kill those that later crawl over the treated surface. Pyrethrum sprays also kill the pests, but they act only upon direct contact with the silverfish and do not have a lasting effect.

It is rather in the nature of these seclusive pests to be in places not normally treated for their occurrence. Attics or basements, for instance, where books, magazines, papers and clothing are often accumulated make excellent hide-outs.

Representatives of the Department of Agriculture's Bureau of Entomology and Plant Quarantine vouch for the statement that one species, called the firebrat, is a vertitable salamander, preferring to live in the vicinity of a fireplace, furnace or other hot spot. It crawls rapidly over hot bricks or metal and shows the most surprising immunity from the effects of high temperature.

Science News Letter, February 10, 1951

VACUUM PUMP

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PHYSICS

Reds Could Study A-Test

It was only necessary to wait for radioactive dust to be borne by the wind into Russian controlled territory. Samples can be collected by plane.

➤ THE RUSSIANS probably have been studying the Nevada atomic explosions beginning last Sunday, weather permitting.

It was not necessary for spies to have gained access to the Nevada testing grounds, or for a new Klaus Fuchs to transmit secret reports to the Russian embassy. The Russians had only to wait until telltale clues as to the kind and size of the bombs exploded in Nevada were borne by the winds across the Atlantic and Europe and into Russian controlled territory.

There is nothing we can do about this—just as there was nothing the Russians could do to prevent us from finding out when they exploded their first bomb in 1949.

The prevailing winds in the northern hemisphere always travel from west to east at altitudes between 10,000 and 30,000 feet. When, by an atomic explosion, millions of microscopic particles are thrown into the air at these altitudes, they will travel from west to east around the earth. At any point, if enough of those particles are caught so that an analysis can be made, scientists can tell what those particles came from.

The Russians could send planes aloft, probably equipped with Geiger counters shielded from the effects of cosmic rays to determine any unusual radioactivity in the air. Air scoops in the planes could collect samples of the microscopic particles and tests could then be made.

If the Russians collected a large enough sample, they will be able to tell whether the Nevada A-bombs were made of uranium or plutonium. From the tiny particles of the casing of the bomb, they will be able to tell what material was used to enclose it.

The United States is using such planes, not only to detect A-bomb explosions, but also to prospect for uranium and other radioactive materials in the ground. It has been reported that France has a plane so equipped.

Stations for the study of cosmic radiation from outside our atmosphere will be able to detect unusual amounts of radioactivity in the air. The radioactivity from the Nevada explosions was of a different quality than cosmic radiation and the Russians should be able to detect this difference.

Instruments for the detection of earthquakes can be checked. However, little can be told from seismographs—perhaps there will be a barely discernible wiggle.

At a press conference, Atomic Energy Commission Chairman Gordon Dean was asked whether the spread of radioactive particles from the Nevada explosions was being kept track of in this country. He answered that such might be a reasonably intelligent assumption.

It was perhaps by these methods that we discovered the Russians had exploded an A-bomb in 1949. These instruments picked up in the United States evidences of the three Eniwetok and two Bikini explosions.

As these radioactive particles travel with the wind they disperse through the atmosphere. For best results, the Russians should

● RADIO

Saturday, February 17, 1951, 3:15-3:30 p.m. EST
"Adventures in Science" with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Mr. Davis will interview talented teen-aged youngsters, winners of awards in the Tenth Annual Science Talent Search.

have planes and meteorological balloons over the Atlantic. However, the closest Russian-dominated place opposite Nevada on the globe in Albania. From airfields in Albania and other nations along the Iron Curtain, Russian planes probably took off in search of radioactive clues.

Science News Letter, February 10, 1951

TECHNOLOGY

Pillow Tank Stores Gasoline at Front

➤ A NEW synthetic rubber-nylon "pillow" tank for gasoline that lies flat on the ground and provides 10,000 gallons of storage in ten minutes will soon be servicing U. S. fighting tanks and trucks at the front.

The collapsible container has been produced by the U. S. Engineer Research and Development Laboratories to replace conventional steel tanks and the familiar 55-gallon drums that have usually stored petroleum for war use.

The pillow container is transported in a protective box and for use is rolled out like a rug on a flat area free of sharp objects. Connections are screwed on and the tank is ready for filling and emptying. Only 3/32 inch thick, the tank is Buna N synthetic rubber reinforced with inner and outer layers of nylon, partly in the form of a liquid coating.

Temperatures of 45 degrees below zero Fahrenheit will not stop the use of the tank during cold weather fighting.

Whereas the erection of usual bolted steel tanks takes days and weeks, the new Army collapsible fuel tank can be made ready in a matter of minutes.

Science News Letter, February 10, 1951

On This Week's Cover

➤ GENERATORS, giant motors and other great electrical machinery need a periodic check up to prolong life just as does the human being.

J. S. Johnson, insulation development engineer of the Westinghouse Electric Corporation, is the "dynamo doctor" who is diagnosing the condition of the giant generator shown on the cover of this week's SCIENCE NEWS LETTER. He is using a cystoscope, physician's instrument for examining the bladder, to search out the condition of the insulation deep inside the coils.

Science News Letter, February 10, 1951

PILLOW TANK—This 10,000-gallon collapsible tank is made of synthetic rubber-nylon and can replace the big steel tanks and 55-gallon drums that have been used to store gasoline for war use. It is transported in a box and for use is spread out like a rug.

WAR SURPLUS BARGAINS

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• Books of the Week •

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ACCREDITED UNDERGRADUATE ENGINEERING CURRICULA IN THE UNITED STATES 1950: And Accredited Technical Institute Programs in the United States 1950—*Engineers' Council for Professional Development*, 16 p., paper, 25 cents.

BEAR RIVER: A National Wildlife Refuge—Vanez T. Wilson and Rachel L. Carson—*Gov't. Printing Office*, Fish and Wildlife Service No. 8, 13 p., illus., paper, 10 cents. A booklet on this wildlife refuge in Utah.

BLUEPRINT READING AND SKETCHING—R. Paul Lightle—*McKnight*, 71 p., illus., paper, 80 cents. An introduction to blueprint reading.

CHILDREN ARE OUR TEACHERS: Outline and Suggestions for Group Study—Marion L. Faegre—*Gov't. Printing Office*, 27 p., paper, 15 cents. To be used with the pamphlet, Your Child from 6 to 12, put out by the Children's Bureau.

THE COMPOSITION OF MILKS—Icie G. Macy, Harriet Kelley and Ralph Sloan—*National Research Council*, 64 p., illus., paper, free upon request to publisher, 2101 Constitution Ave., N. W. Washington, D. C. A compilation of the comparative composition and properties of human, cow, and goat milk. Prepared for the Food and Nutrition Board of the National Research Council.

FACTORS INFLUENCING THE SPAWNING FREQUENCY IN THE FEMALE CICHLID FISH *Tilapia Macrocephala*—Lester R. Aronson—*American Museum of Natural History*, 26 p., illus., paper, 25 cents. An analysis of the visual stimulus in the spawning process.

FAUNAL LISTS AND DESCRIPTIONS OF PALEOZOIC CORALS—R. S. Bassler—*Geological Society of America*, 315 p., illus., $3.50. Arranged in stratigraphic order.

THE FLOW-THROUGH LINT-COTTON CLEANER—Victor L. Stedronsky and Charles S. Shaw—*Gov't. Printing Office*, U. S. Dept. of Ag. Circ. No. 858, 30 p., illus., paper, 10 cents.

HOW BIG IS BIG?: From Stars to Atoms—Herman and Nina Schneider—*William R. Scott*, 40 p., illus., paper, $1.75. A child's book depicting relative sizes of big and little objects. Illustrated by Symeon Shimin.

INTERPRETATION OF ORE TEXTURES—Edson S. Bastin—*The Geological Society of America*, 101 p., illus., $1.75. An aid to the diagnosis of the origin of ore deposits through microscopic study.

ISAIAH BOWMAN—Gladys M. Wrigley—*American Geological Society*, 59 p., illus., paper, 50 cents. A brief biography written as a memorial.

JANE'S ALL THE WORLD'S AIRCRAFT 1950-51—Leonard Bridgman, Ed.—*McGraw-Hill*, 41st ed., 425 p., illus., $20.00. A standard reference work which includes records of all the Nations' air forces and a record of civil aviation. The section on military aviation is brought up-to-date as of mid-1950. A new feature is a list of first flights made within the past year.

JEW-HATE AS A SOCIOLOGICAL PROBLEM—Peretz F. Bernstein—*Philosophical Library*, 300 p., $3.75. Although written in 1923 and just now being published, this book discusses many present-day problems of anti-Semitism. The author is president of the General Zionist Organization in Israel and the book was translated by David Saraph.

LINES, NETWORKS AND FILTERS—William M. Breazeale and Lawrence R. Quarles—*International Textbook Co.*, 293 p., illus., $6.50. Deals primarily with wire communication circuits.

MEDICAL TREATMENT IN OBSTETRICS AND GYNECOLOGY—C. Frederic Fluhmann—*Williams and Wilkins*, 157 p., illus., $3.00. Bringing together in one convenient volume information from many sources arranged in alphabetical order for ready reference.

NEW SPECIES AND RECORDS OF CHTHONIID PSEUDOSCORPIONS—C. Clayton Hoff—*American Museum of Natural History*, 13 p., illus., paper, 25 cents. Descriptions of a collection, including two new species.

NOTES ON THE WRENS AND DIPPERS OF WESTERN ASIA AND INDIA—Charles Vaurie—*American Museum of Natural History*, 19 p., illus., paper, 25 cents. Based on specimens collected in Iran, Afghanistan and India.

107 LEATHERCRAFT DESIGNS IN ACTUAL SIZE—John W. Dean—*McKnight*, 50 p., illus., paper, $2.00. 50 plates of designs to be used in leather tooling.

REPORT OF THE CHIEF OF THE SOIL CONSERVATION SERVICE, 1950—U. S. Dept. of Ag.—*Gov't. Printing Office*, 78 p., illus., paper, 20 cents.

REPORT OF THE SECRETARY OF THE SMITHSONIAN INSTITUTION: and Financial Report of the Executive Committee of the Board of Regents for the Year Ended June 30, 1950—Smithsonian Institution—*Gov't. Printing Office*, 161 p., illus., paper, 50 cents.

THE SMITHONIA METEORITE—Sharat Kumar Roy and Robert Kriss Wyant—*Field Museum of Natural History*, 6 p., illus., paper, 15 cents. A detailed description of this meteorite.

SOME BIOLOGICAL EFFECTS OF DITCHING TIDEWATER MARSHES—Warren S. Bourn and Clarence Cottam—*Gov't. Printing Office*, Fish and Wildlife Service Research Report 19, 30 p., illus., paper, 60 cents. A study conducted over a 12-year period, 1935-1947, for the control of mosquitoes in Delaware. Maps for these years are included.

STUBBLE-MULCH FARMING ON WHEATLANDS OF THE SOUTHERN HIGH PLAINS—Wendell C. Johnson—*Gov't. Printing Office*, U. S. Dept. of Ag. Circ. No. 860, 18 p., illus., 10 cents.

SURVEY OF MARINE FISHERIES OF NORTH CAROLINA—Harden F. Taylor and A Staff of Associates—*University of North Carolina Press*, 555 p., illus., $10.00. A summary of existing conditions in the fisheries of this region.

TEXTILE FIBERS—L. E. Parsons and John K. Stearns—*International Textbook Co.*, 71 p., illus., $4.00. A practical guide to cotton, wool, man-made fibers and yarns.

TWO WAY STREET—U. S. Advisory Commission on Educational Exchange—*Gov't. Printing Office*, 119 p., illus., paper, 60 cents. Tells about United States programs of international education exchange in over 90 countries in all areas of the world.

Science News Letter, February 10, 1951

PSYCHOLOGY

Frightened Into Hatred

➤ "WHILE trying to frighten men into rationality, scientists have frightened many into abject fear or blind hatred," the BULLETIN OF THE ATOMIC SCIENTISTS (Jan.) declared. The magazine evaluated five years of work of the atomic scientists in trying to get the world to accept international control of atomic energy.

The result of this intrusion of scientists into public affairs was inevitable, the BULLETIN said. However, the question is whether the despair and confusion created by the scientists will be more important than the increased understanding of atomic energy and its implications by the world's leaders.

Public opinion has become only "half-educated," according to the magazine, on the implications of the unleashing of atomic energy. This has resulted in the backing of the concept that military planning should be based on atomic weapons and in the decision to go all-out on the H-bomb. Both these decisions are of "doubtful strategic soundness," the magazine declared. The statement was written by Eugene Rabinowitch, editor of the magazine.

The BULLETIN acknowledged the almost complete failure of scientists to bring about international control of the great new energy they gave to the world. However, it said, scientists should stay in public affairs.

"While the present emergency continues —and it may continue for many years— scientists and others who think in terms of rational reorganization of the world will have to be patient and humble," the BULLETIN said. "For the time being they will have to be content with contributing to the solution of day-to-day problems."

Science News Letter, February 10, 1951

MEDICINE

Antihistamines Kill

Overdoses have caused the deaths of eleven persons, eight of them children. Cause may have been accident, suicidal intent of impaired judgment caused by drug.

➤ OVERDOSES of antihistamine drugs have killed 11 persons, eight of them children under two years old, Drs. J. B. Wyngaarden of the Massachusetts General Hospital, Boston, and M. H. Seevers of the University of Michigan School of Medicine, Ann Arbor, report. (JOURNAL, AMERICAN MEDICAL ASSOCIATION, Feb. 3).

Convulsions occurred in five and probably in two more of the eight child deaths. The convulsions from overdosage with these drugs start within one-half to two hours. Deaths have occurred in two to 15 hours.

Grown-ups are more likely to develop depression of the central nervous system, rather than convulsions, from overdosage with these drugs, the doctors find. The depression may be fatal.

A serious blood disease, agranulocytosis, has been reported nine times with one death as a result of these drugs.

The cases of poisoning reviewed by the two doctors resulted, they state, "from accident, ignorance, suicidal intent, impaired judgment caused by the drug itself or iatrogenic causes."

No antidote exists for these drugs. Histamine is not the thing to give, since the poisonous effect of antihistamine drugs is not related to their antihistamine activity in itself. Treatment must be directed toward relieving the symptoms.

Science News Letter, February 10, 1951

ASTRONOMY

Solar Outbursts Explained

New theory holds that hisses, swishes and grinding noises are caused by streams of charged particles being slowed down and bunched while still in sun.

➤ A NEW theory to explain sudden outbursts of hisses, swishes and grinding noises from the sun has been prepared by Dr. Hari K. Sen, working at the National Bureau of Standards while on leave from Harvard Observatory, and J. Feinstein of the Bureau.

These signals from the sun are caused by streams of charged particles being slowed down and bunched together while still within the sun, the scientists reason.

These noisy outbursts are normally picked up on ultra-high-frequency radar equipment, but occasionally they are so violent they interfere with television and FM radio broadcasts.

Such solar noise has been found to be of two types. One is a faint and fairly regular background of noise. The sun's outer envelope is believed to generate and broadcast the waves causing this noise.

But the sun also sends out bursts of static thousands of times more noisy and more objectionable than this background noise. These sudden outbursts are so violent that the sun's heat alone is not believed capable of causing them.

Streams of charged particles are already known to move at high speeds within the sun before they escape through the sun's corona or outer envelope, and make their way to the earth. So Dr. Sen and Mr. Feinstein looked for waves that might be produced by these streams as they raced around the sun. Finally they found waves that grow as they move.

This wave growth results from a two-stage interaction process. As they speed through the sun's atmosphere, the streams are slowed down and bunched together, the Bureau scientists state.

When this motion has the correct phase, the electric field of the wave tends to slow down the bunches of charged particles, converting their kinetic energy of motion into electric energy. This process actually occurs in a continuous fashion as the waves and streams advance.

Thus when the waves leave the sun, they are bunched and clumped together. When they reach the earth, much noise greets those using ultra-high-frequency instruments.

Science News Letter, February 10, 1951

PHYSICS

Atomic Piles Yield Luminous Watch Paint

➤ A SELF-LUMINOUS substitute for radium on watchdials and other instruments could be recovered from the waste from America's atomic reactors that now has to be buried for safe disposal, Dr. F. C. Henriques, Jr., technical director of Tracerlab, Inc., of Boston, has told the American Chemical Society's New York Section.

The radioactive chemical is promethium, unavailable and even unknown until uranium was fissioned as a by-product of A-bomb production. It is produced in relatively large quantities in the atomic "furnaces."

Other promising isotopes now wasted include strontium 90 and cesium 137. Both of these could be used for sterilization purposes, with strontium being applicable to surface sterilization of perishable produce, such as tomatoes.

Isolation and packaging of useful isotopes from atomic waste materials will be dependent upon risking capital and ingenuity of scientists and engineers with cooperation between industry and the Atomic Energy Commission.

Science News Letter, February 10, 1951

Speed is not the only advantage of the jet-propelled military *aircraft;* its ability to climb to high altitude is also important.

Many fields of *asparagus* are permitted to grow up in weeds after the cutting season is over; now being used is a cyanamid spray which kills weeds but does not injure the asparagus.

At Saugus, Mass., site of America's first successful *ironworks* which was abandoned in 1688, over three tons of iron relics have been excavated recently, including a 500-pound sledge hammer.

America's *pipelines* for petroleum products have greatly increased in both mileage and capacity in the past 10 years; the total length of such pipelines is now nearly 153,000 miles.

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• New Machines and Gadgets •

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❁ *MINIATURE electronic tube is for use in television receivers when ultra-high-frequency channels come into use. This tube "beats" down the ultra-high-frequency signal by sending out its own signal which, when mixed with the UHF signal, produces a resulting lower frequency.*

Science News Letter, February 10, 1951

❁ *TRY-ON SHOES for children, for use in retail stores, are made of transparent plastic and permit salesmen and parents to see exactly how the shoes fit the feet. When the proper shoe is determined, exact counterparts in leather, made on the same lasts, are delivered for wear.*

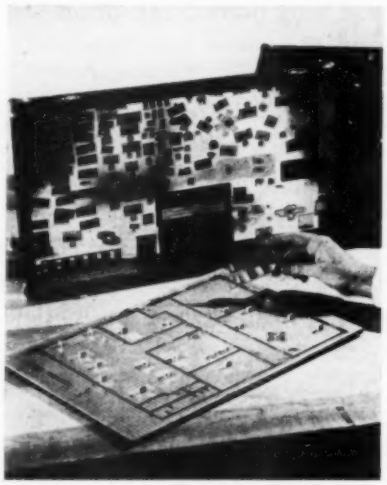
Science News Letter, February 10, 1951

❁ *FRACTURE table, for use in moving an injured person from the scene of the accident, is equipped to hold the entire body motionless and to supply traction on any broken bone, including the spine. Made of duralumin, it allows patients to be X-rayed without removal from the table.*

Science News Letter, February 10, 1951

❁ *FACE MASK for the football player, recently patented, is an improved type with a plastic outer surface and a lining of foam rubber. With cut-outs over eyes and mouth, it has special construction to protect the nose from injury.*

Science News Letter, February 10, 1951



❁ *FLOOR-PLAN KIT, for amateurs planning a house, includes a transparent plastic cross-hatched sheet on which lines are drawn without ruler by following the grid. Pieces representing furniture are held in place by magnets. Copies on sensitized paper are made with accompanying ultraviolet lamp.*

Science News Letter, February 10, 1951

❁ *POLLEN SAMPLER, for determining the amount of hayfever-causing pollen in the air, is a portable instrument in which air is drawn across the adhesive side of a moving tape by means of a fan. Pollen, spores and other particles caught on the tape are studied with a microscope.*

Science News Letter, February 10, 1951

❁ *COTTON SAMPLER diverts small amounts of cotton flowing through the gin lint flue at six periodic intervals during the ginning of a bale, packages the collections, and applies the same identification to it as given the bale. The automatic device re-sets itself for each bale ginned.*

Science News Letter, February 10, 1951

❁ *ALL-PLASTIC screen for the motion picture theater is made of a vinyl material resistant to creasing, mildew and flame. About eight percent of its bright white surface is occupied by tiny holes, enough to assure satisfactory sound transmission but not enough to cut picture brilliancy.*

Science News Letter, February 10, 1951

Do You Know?

Rubber trees are usually first tapped for *latex* in their fifth year.

Uranium oxide, now important in atomic energy, was long used for coloring glass and ceramics.

A type of *radiation detector* used by the U. S. Navy uses alkali halides which turn blue under gamma ray exposure.

The successful operation of a municipal *smoke abatement* program depends upon the cooperation of industry and individual householders.

Benzene, used in making synthetic rubber, plastics and many other products, can be made synthetically from petroleum; usual source is coal tar.

At the end of four years of airplane spraying with DDT on trees on 315,000 acres in the Cape Cod area, not a single living *gypsy moth* was found, although the region formerly was highly infested.

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